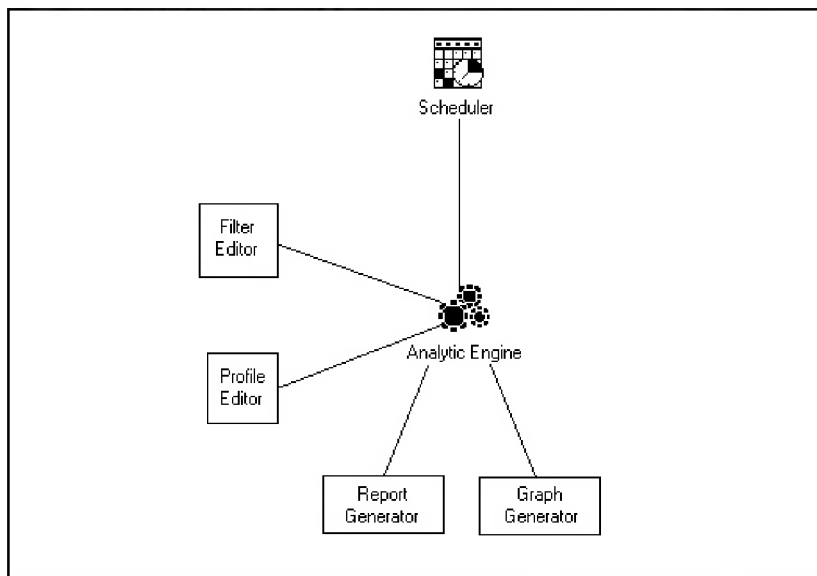

Report Generator

Report Generator produces output in the form of traffic reports and graphs. The MAT Scheduler invokes the Analytic Engine at the scheduled time. The Analytic Engine uses profiles and filters to select specific traffic data to generate the requested output. See Figure 14. For details on setting up and running reports, refer to “User Interface” on page 15. For a complete example of report generation, refer to “Getting Started” on page 9.

Figure 14
Overview of Report Generator



The Report Generator uses the file produced by the Analytic Engine to generate a report or graph, as defined in its profile and filter.

Reports

Report Generator can produce the following types of traffic reports, which you request from the Reports menu of the Traffic Analysis window:

- System Reports
- Customer Reports
- Customer Network Reports
- System Threshold Reports
- Customer Threshold Reports
- Customer Summary Reports

Reports are one or more pages in length. At the top of each page is a report header that includes the report name, site name, date and time of the report, and page number. Figure 15 is an example of a report header.

Figure 15
Example of a report header

Traffic System Summary Report		
Hourly		
Username : ADMIN		Date: 12/4/1996
Site - System : Customize This Site - Customize This System		Page: 1
Sample Size : 48		
Analysis Period : 01/09/1996 - 13:00 To 01/10/1996 - 13:00		
Customer Number : 0		

You can customize the reports to include user or company information.

You can also select a reporting option to print a banner (informational) page before the first page of the report. The banner page can include the name of the user who printed the reports, and the options, filters, and profiles used. Banners are useful when several people share a printer.

The rest of this chapter describes the groupings that appear on the Traffic Analysis Reports and Graphs menus, and items that belong in each group. To print any of these to the selected output device, open the appropriate menu. Select the category and open the associated dialog, then select the report or graph. Click on **OK** to send it to the output device or click on **Schedule** to schedule it. For detailed instructions, refer to “User Interface” on page 15.

System reports

The following provide details on the general operation of your Meridian 1:

- Network Loops
- Service Loops
- Dial Tone Delay
- Processor Load
- Selected Terminals
- Junctor Group
- Command and Status Links and Application Module links
- D-Channel
- Multi-purpose ISDN Signaling Processor Traffic
- Multi-purpose ISDN Signaling Processor DCH Management
- Multi-purpose ISDN Signaling Processor Messages

Network loops

In the Networks Loops profile, select the options appropriate for the information you wish to produce. Click on the **Edit** button next to the Profile text box. The Profile Edit dialog appears. First select the type of report by selecting one of the following loop options:

- Terminal Loop
- Conference Loop
- Service Loop

Each of these report types lets you define the loop number whose data is to appear in the report. For example, you may wish to have a report for Loop 10.

After you have selected the loop, select which options to include:

- Intraloop FTM
- Intraloop Usage
- Intraloop Peg Count
- Total Loop FTM
- Total Loop Usage
- Total Peg Count

Service loops

From the Service Loops list, select the service type:

- Dial Tone
- Busy Tone
- Overflow Tone
- Ring Back Tone
- Tong Ringing
- Miscellaneous Tone
- Outpulsers
- Digitone Receiver
- Conference
- Multifrequency Sender
- Tone Detector
- Multifrequency Receiver

Each of these report types lets you define the loop number whose data is to appear in the report. In addition to the features selected, you can select the following reporting options:

- Service FTM
- Service Usage
- Service Request Peg Count

Dial tone delay

From the Dial Tone Delay list, select the dial tone measurement:

- Delay Greater than 10 Seconds
- Delay Greater than 3 Seconds
- Delay Less than 1 Second

Processor load

From the Processor Load list, select the peg count to report for CPU functions:

- Idle Cycle Count
- Total CPU Attempts
- Load Peak Peg
- I/O Buffer Overflows
- Call Register (CR) Overflow
- Rated Call Capacity
- Real Time Usage (%RTU)
- Maximum Real Time Used
- Number of Eliminated Observation
- Line Load Control

Selected terminals

From the Selected Terminals list, select the Loop Number to be measured.

Junctor group

For each Junctor Group, select the link (option) to be measured:

- Failure to Match (FTM)
- Usage
- Peg Counts

Command and status links and application module links

From the Command and Status Links and Application Module links lists, select the links you wish to measure:

- System Measure
- Command and Status Links (CSL)
- Outgoing Message Types (OMSG)
- Incoming Message Types (IMSG)
- Number of Priority 1 to 4 Messages (PRI)
- Number of Incoming and Outgoing Packets (PACKETS)

System Measurement

Select the item you wish to measure from the options in the System Measurement list:

- Input Queue Overflow
- Output Queue Overflow
- System Resource Not Available
- Average Input Queue Size for System Messages
- Average Input Queue Size for Call Processing Messages
- Average Input Queue Size for Administration Messages

Command and Status Link

From the Command and Status Link list, select the following options:

- Command and Status Link (CSL) Port Number
- Number of CSL Output Failures
- Number of Times the Link Stopped
- Link Down Time in Seconds
- Average Output Queue Size
- Number of Times IOCHAR TTY Buffer Overflowed
- Number of Packets with End of Block Flag Missing
- Number of Packets with End of Block Flag Premature

- Number of Packets with Invalid Priority
- Number of Packets with Invalid Length

Outgoing and Incoming message types

From the Outgoing and Incoming message types list, select the following options:

- Alarm Indication
- Call Answered
- Software Audit
- Call Abandons Queue
- Call Answer
- Call Disconnect
- Channel Assignment
- Call Enters Queue
- Call Connect
- Conference Request
- Confirmation
- Call Connection Request
- Change Terminal Status
- Administration Data Block

D-Channel

From the D-Channel measurements list, select either incoming, outgoing, or both incoming and outgoing messages. Under each message type, select the option you wish to measure:

- Number of Messages Received/Sent
- Number of Call Processing Messages Received/Sent
- Number of Management Messages Received/Sent
- Number of Maintenance Messages Received/Sent
- Average Number of Bytes per Message
- Average ICOG Link Usage
- Average OCOG Link Usage
- Request Queued Output Buffer
- D-Channels on MSDL Card
- Accumulated Real Time D-Channel Busy Transferring Messages
- Number of Times when No Request Output Message Buffer was Available
- Number of Times a Message with No End of Message (EOM) Mark was Received
- Number of PRA Layer-3 Protocol Errors Since that Last Traffic Report
- Number of Times D-Channel was Down
- Accumulate Real Time D-Channel was Down Since Last Report in Units of 2 Seconds

Multi-purpose Serial Data Link

If Multi-purpose Serial Data Link (MSDL) cards are available, select the appropriate parameters:

- Average Link Usage
- Number of Connected Calls
- Peak Link Usage
- Time Since MSDL D-Channel Traffic was Last Cleared

Multi-purpose ISDN signaling processor traffic

From the MISP Traffic list, select from the following options:

- Attempted Calls
- Completed Calls
- Call Length
- MISP/BRSC Messages
- Terminal Messages
- MISP/BRSC Data Packets
- Terminal Data Packets

Multi-purpose ISDN signaling processor DCH management

From the MISP DCH Management list, select from the following options:

- MISP/BRSC Links
- Terminal Links
- MISP/BRSC Message
- Terminal Messages
- Incomplete Calls
- Link Errors

Multi-purpose ISDN signaling processor messages

From the MISP Messages list, select the desired option:

- 1 - 10
- 11 - 20
- Over 20 Bytes Long

Customer reports

Customer Reports list information on general usage, including trunk usage, network usage, and attendant service. Select a specific report from the following list of Customer Reports:

- Networks
- Trunks
- Customer Console Measurements
- Individual Console Measurements
- Feature Key Usage
- Radio Paging
- Call Park
- Messaging and Auxiliary Processor Links
- Network Attendant Service

Networks

From the Networks list, select the report parameters:

- Incoming
- Outgoing
- Intracustomer
- Tandem

Under each of the selected entries, select the item to be reported:

- FTM
- Usage
- Peg Count
- Permanent Signal
- Abandon
- Partial Dial

Trunks

From the Trunks list, select the trunk type:

- Data Port Interfacing with Data Line Card
- Automatic Identification of Outgoing Dialing
- AUTOVON
- Common Control Switch Arrangement with ANI
- Central Office
- Dictation
- Direct Inward Dialing
- Foreign Exchange
- Feature Group D trunk
- Integrated Services Access (X11 R16 and later)
- Modem Interfacing with 500 Type Line Card
- Music
- Paging
- Recorded Announcement
- Emergency Recorder
- Release Link Main
- Release Link remote
- Tie Trunks
- WATS Lines

Select the desired parameters for these trunks:

- Trunks Equipped
- Trunks Working
- Incoming Trunk Usage
- Incoming Trunk Peg Count
- Outgoing Trunk Usage
- Outgoing Trunk Peg Count
- Outgoing Trunk Overflow
- All Trunks Busy
- Toll Peg Count
- Incoming ISA Peg Count (X11 R16 and Later)
- Outgoing ISA Peg Count (X11 R16 and Later)

Customer console

From the Customer Console list, select the appropriate options:

- Average Speed of Answer
- Average Attendant Response
- Calls Delayed Peg Count
- Average Time in Queue
- Abandoned Calls Peg Count
- Average Wait Time of Abandoned Calls

Individual console

From the Individual Console list, select the appropriate options:

- Peg Count of Internal Calls Handled by Attendant
- Total Time Spent Servicing Internal Request
- Peg Count of External Calls Handled by Attendant
- Total Time Spent Servicing External Requests
- Total Time Console is Attended
- Total Time Spent Servicing Calls
- Number of Times all Attendant Loops are Busy
- Attendant Alternative Answering (AAA) Peg Count
- Successful AAA Termination Peg Count

Feature key usage

This report provides the peg count of feature key usage. The measurements apply only to those features activated by keys on either a multi-line telephone or an attendant console. Select the appropriate option from the following list:

- Feature Number
- Feature Name
- Peg Count

Select the feature key options to report:

- Auto Dial
- Call Forward
- Call Pickup
- Call Transfer
- Call Waiting
- 3-Party Conference
- 6-Party Conference
- Manual Signaling

- Override
- Privacy Release
- Private Line Service
- Ring Again
- Speed Call
- Voice Call
- Volume Control
- Busy Verify
- Barge-In
- Call Selection
- Attendant Recall
- Dial Intercom
- Message Waiting Indicator
- Message Indication
- Message Cancellation
- Message Center INCALLS
- Attendant Overflow
- Group Call
- Auto Answer Back
- Call Park
- Stored Number Redial
- Last Number Redial
- Enhanced Hot Line
- Group Pickup
- DN Pickup
- Attendant End-to-End Signaling
- Conference-Autodial

- Conference-Speed Call
- Conference-Hot Line
- Centrex Switchhook Flash
- DID Route Control
- No Hold Conference

Radio paging

From the Radio Paging list, select the desired option:

- Pre Selection
- Post Selection
- Paging Time-Out

Parallel radio paging

From the Parallel Radio Page list, select the desired option:

- Paging Recall Count
- Average Answer Time

Serial radio paging

From the Serial Radio Paging list, select the appropriate option:

- Automatic Mode Count Increments
- Manual Mode Count Increments

Call park

From the Call Park list, select the desired traffic measurements:

- System Park Peg Count
- System Park Overflow Peg Count
- Station Park Peg Count
- Parked Call Access Peg Count
- Park Recall Peg Count
- Average Wait Time in Call Park

Auxiliary process link

From the Auxiliary Process Link (APL) list, select the statistics to include as options for the APL number. Select the APL number or range of numbers to define the report parameters.

- Output Queue Overflow
- Input Queue Overflow
- Average Output Queue Size
- Average Input Queue Size
- Total Time the APL was Not Operating
- Total Time Input Message Call Register was Unavailable
- Total 4 Second Time Outs
- Total Negative Acknowledgments
- Total Out of Synchronization Characters Received from the Meridian 1

Output message traffic

The messages reported are messages output by the Meridian 1 to the APL.

Input message traffic

The messages reported are messages received by the Meridian 1 from the APL.

Message attendant queue

From the Message Attendant Queue list, select the options regarding operations:

- Command Status Link Value Added Server ID
- APL Number
- Calls in the Message Attendant Queue
- Direct Calls to the Message Attendant
- Indirect Calls to the Message Attendant
- Abandoned Calls to the Message Attendant
- Average Time Calls Waiting Before Abandoning
- Average Delay
- Direct Call Processing Time Each Message Attendant Spent Handling Answered Calls to the ACD DN
- Post Call Processing Time Each Message Attendant was in
- Not Ready

Telephone set status

Select information regarding telephone usage:

- ACD DN
- Value Added Server ID
- Total Telephone Status Calls
- Total Calls Accessing SPRE Codes
- Total Call Forward Access Calls
- Total Key Access Calls
- Total Unsuccessful Messaging Calls

Telephone messaging

Select information regarding telephone messaging:

- ACD DN
- Value Added Server ID
- The APL Number
- Calls in Message Attendant Queue
- Total Telephone Status Calls
- Total Abandoned Calls
- Total Unsuccessful Telephone Status Calls
- Average Telephone Message Processing Time
- Total Telephones Requesting the Message Attendant

Network attendant service

The Network Attendant Service (NAS) traffic data includes the following options:

- Number of Attempts to Route to the NAS
- Number of Attempts to Route to NAS Across Each Alternate Route to NAS
- Number of Drop Back Busies Over Each Alternative Route to NAS

Customer network traffic reports

The Customer Network Traffic Reports provide information on general traffic over the network. Select the type of Customer Network Traffic Report from the following list:

- Route List Requests
- Network Class-of-Service
- Incoming Trunk Group

Route list requests

From the following Route List Requests list, select from the following options:

- Route List Requests
- Route List Requests Served Without Delay
- Expensive Route Acceptances
- Route List Requests Standard Blocking
- Route List Entry Use
- ACD DN
- Value Added Server ID
- APL Number
- Total Calls in the Message Attendant Queue
- Total Telephone Status Calls
- Total Successful Telephone Status Calls
- Total Abandoned Calls
- Total Unsuccessful Telephone Status Calls
- Average Telephone Message Processing Time
- Total Telephone Requesting the Message Attendant

Off hook queuing

Select from the following Off-Hook Queuing Measurements (OHQ) options:

- OHQ Calls
- Average Time in OHQ
- Quantity of Calls Abandoned While OHQ

Call back queuing

From the following Call-Back Queuing Measurements (CBQ) list, select from the following options:

- CBQ Calls
- Average Time in CBQ
- Quantity of CBQ Offering
- Quantity of CBQ User Cancellations

Remote virtual queuing

Select the appropriate option from the Remote Virtual Queuing Measurement (RVQ) list:

- RVQ Calls
- Average Time in RVQ
- Quantity of RVQ Offerings
- Quantity of RVQ User Cancellations

Network class of service

Select one of the following parameters:

- Off Hook Queuing OHQ
- Call Back Queuing CBQ
- Virtual Queuing RVQ

Select the desired reporting options:

- Calls Attempted
- Requests Served Without Delay
- Expensive Route Acceptances
- Network Call Standard Blocking
- Refusing Expensive Routes
- Quantity of Calls Placed
- Average Time

Incoming trunk group

In the Incoming Trunk Group list box, select from the following:

- Off Hook Queuing (OHQ)
- Call Back Queuing (CBQ)
- Remote Virtual Queuing (RVQ)

The Reporting options include the following:

- Calls Placed
- Average time
- Incoming Calls offered
- Calls accepting
- Average time
- Blocked
- Callback attempts not answered or canceled

System threshold reports

System Threshold Reports provide information on such features as dial tone speed and loop traffic. Select the desired report from the following System Threshold Reports list box:

- Dial Tone Speed
- Loop Traffic
- Junctor Traffic
- Super Loop Traffic

Dial tone speed

Dial tone speed threshold is set on the percentage of calls that experience dial tone delay in excess of 3 seconds. Set the desired dial tone speed threshold for the report, in the range from **0.0%** to **99.0%**.

You can use a Profile parameter to define the Dial Tone Speed Report threshold. The default report fields are:

- Dial Tone Speed
- Threshold
- Exceeded

Loop traffic

A Profile parameter may be used to define the Loop Traffic. For each Loop number you can set the range from **000** to **999** CCS. The default report fields are:

- Loop Number
- Total Loop Usage
- Threshold
- Exceeded

Junctor traffic

From this report, you can select the **Junctor group** to be reported. The Junctor usage and threshold information are displayed for each selected Junctor group.

You can use a Profile parameter to define the Junctor Traffic Report. The default report fields are:

- Junctor Group
- Junctor Usage
- Threshold
- Exceeded

Super loop traffic

Select the **Juncture group** to be reported. The Super Loop usage and threshold information are displayed for each selected Super Loop.

A Profile parameter can be used to define the Super Loop Traffic Report. The default report fields are:

- Super Loop Number
- Super Loop Usage
- Threshold
- Exceeded

Customer threshold reports

Customer Threshold Reports provide threshold information on usage. These include such reports as: Average Speed of Answer and Percent Last Trunk Busy. Select the desired report from the following Customer Threshold Reports:

- Incoming Matching Loss
- Outgoing Matching Loss
- Average Speed of Answer
- Percent Last Trunk Busy
- Off-Hook Queue Overflow Threshold

Incoming matching loss

A Profile parameter may be used to define the percentage of incoming calls when FTM occurs. The default report fields are:

- Incoming Match Loss
- Threshold
- Exceeded

Outgoing matching loss

A Profile parameter may be used to define the percentage of outgoing calls when FTM occurs. The default report fields are:

- Outgoing Match Loss
- Threshold
- Exceeded

Average speed of answer

A Profile parameter may be used to define the threshold level set on the average time that calls wait to be answered by the attendant. The default report fields are:

- Average Answer Speed
- Threshold
- Exceeded

Percent last trunk busy

A Profile parameter may be used to define the Percentage of trunk connections where the last trunk in a trunk group is made busy. The default report fields are:

- Trunk Group
- Trunk Group Busy
- Threshold
- Exceeded

Off-Hook queue overflow threshold

A Profile parameter may be used to define the percentage of OHQ calls that timed out in the OHQ before an available trunk was found. The default report fields are:

- Off-Hook Q Overflow
- Threshold
- Exceeded

Customer Summary Reports

Customer Summary Reports provide summaries of system and customer data. These include such reports as: Traffic System Summary and Trunks Summary Reports. Select the desired report from the following Customer Summary Reports:

- Traffic System
- Trunks
- Customer Console
- Individual Console

Traffic system summary

The default report fields are sorted into three categories. They are as follows:

- Processor Load
 - Highest Percent RTU
 - Hours of Highest Percent RTU
- Trunks
 - Number of Trunks Equipped
 - Number of Trunks Working
 - Number of All Trunks Busy
 - Number of Outgoing Overflows
- Consoles
 - Number of Attendants
 - Average Speed of Answer
 - Number of Abandoned Calls
 - Average Wait Time of Abandoned Calls

Trunks summary

The default report fields are:

- Total Connections
- Average Connections Per Hour
- Total Usage Duration
- Average Duration Per Peg Count
- Average Duration Per Hour
- Total Trunks Equipped
- Total Trunks Working
- Trunks Utilization
- All Trunks Busy
- Outgoing Overflow

Customer console summary

The default report fields are:

- Total Calls Handled by All Attendants
- Total Abandoned Calls
- Total Calls Delayed
- Average Calls Handled by All Attendants Per Hour
- Average Calls Delayed Per Hour
- Average Abandoned Calls Per Hour
- Average Wait Time of Abandoned Calls Per Hour
- Average Time In Queue Per Hour
- Average Answer Speed Per Hour
- Average Attendant Response Per Hour

Individual console summary

The default report fields are:

- Total Peg Count of Calls Handled by Attendant
- Average Peg Count of Calls Handled by Attendant Per Hour
- Total Time Spent Servicing Requests by Attendant
- Average Time Spent Servicing Requests by Attendant Per Hour
- Average Time Spent Servicing a Call by Attendant
- Percentage of Time Spent Servicing External Requests
- Percentage of Time Spent Servicing Internal Requests
- Average Time Console was Manned Per Hour
- Total # of Times All Attendant Loops are Busy
- Average # of Times All Attendant Loops are Busy Per Hour

Graphs

Traffic Analysis provides a list of graphs that provide information on traffic data collected from the Meridian 1. You can generate bar, line, and pie graphs to display this information.

When you display a graph on the screen, the screen includes a **Next** button. If you reach the end of the graph and click on **Next**, the graph disappears. You must rerun the graph to view it again.

Note: The maximum number of values (x-axis points) allowed for each Traffic Analysis graph is 1500. If you are generating graphs for traffic samples which contain more than 1500 values, then you should set the system reporting filters (ranges) to reduce the number of samples.

The following is a list of graphs available on the Graphs menu of the Traffic Analysis window.

- System Reports
 - Network Loops
 - Processor Load

- Customer Reports
 - Trunks
- Customer Console Measurements
 - Messaging And Auxiliary Processor Links
- Customer Network Reports
 - Route Lists
- System Threshold Reports
 - Loop Traffic
 - SuperLoop Traffic
- Customer Threshold Reports
 - Percent Last Trunk Busy

System graphs

The System Graphs provide a graphical display for system data as collected from the Meridian 1. The following sections describe each system graph.

Network loops

Network loops graphs display the total loop usage for terminal loops:

- All Loops by Total Loop Usage
- Loop Numbers by Low Loop Usage
- Loop Numbers by Average Loop Usage
- Loop Numbers by High Loop Usage

Process load

The Process load graph displays information on the real time load by time and/or date. It displays the rated call capacity by time (over a 24 hour period), which estimates CPU call capacity (the maximum level at which the CPU can operate and still maintain the required grade of service). The graph also displays the maximum real time used every hour during the past 24 hours.

Customer graphs

Customer Graphs provide graphical representations for general usage (such as trunks and console).

Trunks graphs

Trunk graphs display information on all busy trunks for each trunk type, including the following:

- All Trunk Types by System Blockage or Percent of Calls
- Selected Trunk Types by System Blockage or Percent of Calls

Customer console measurements and graphs

These graphs display the average speed of answer (by time and/or date). This is the average time that a call waits in the attendant queue. They also display the average wait time of abandoned calls (by time and/or date). This is the average time that a call waited before it was abandoned.

Messaging and auxiliary processor links graphs

These graphs display under the Message Attendant Queue:

- Total Abandoned Calls to the Message Attendant by Time and/or Date
- Average Time Calls Waiting Before Abandoning by Time and/or Date

Customer network graphs

This section describes the route lists graphs.

Route lists graphs

Select from the following options:

- Expensive Route Acceptances by time and / or date
- Route List Requests Standard Blocking by time and / or date
- Display under the Off Hook Queuing, the quantity of calls abandoned while in OHQ.

System threshold graphs

This section describes the Loop traffic and SuperLoop traffic graphs.

Loop traffic graphs

Display the threshold for each loop:

- All loop types by loop usage, percentage or threshold
- Selected loop types by loop usage, percentage or threshold

SuperLoop traffic graphs

Display the threshold for each SuperLoop:

- All SuperLoop by loop usage, percentage or threshold
- Selected SuperLoop by loop usage, percentage or threshold

Customer threshold graphs

This section describes the Percent last trunk busy graphs.

Percent last trunk busy graphs

Display the percentage of all trunks busy:

- All trunk groups by all trunks busy or threshold
- Selected trunk groups by all trunks busy or threshold

Graph types

The following graph types are available for presenting graphical data:

- 2-D Bar Graph
- 3-D Bar Graph
- Horizontal and Vertical Bar Graphs
- Stacked Bar Graph
- Pie Graph